

Office Memorandum • UNITED STATES GOVERNMENT

TO : The Files - RD-107, Task Order 12

DATE: 27 October 1959

FROM :

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SUBJECT:

(Trip Report - Miniature IF Amplifiers, RD-107, T.O. 12, 22 OCT 59)

1. On 22 October 1959 a visit was made to [redacted] to discuss the progress made in developing the miniature IF amplifiers. Persons present for this discussion were:

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2. This program provides for the development of two miniature IF amplifiers, one employing single conversion using a crystal filter as the bandpass-determining element; and the second, a double conversion amplifier using a ceramic resonator as the bandpass-determining element. The construction and development of the crystal filter is being done at [redacted] and the ceramic resonator is being developed at [redacted]. Because of the short notice of the writer's trip to [redacted] was unable to obtain a complete progress report from [redacted] however, he did state that the progress of this work was satisfactory with delivery of the crystal filter [redacted] expected sometime shortly after Christmas.

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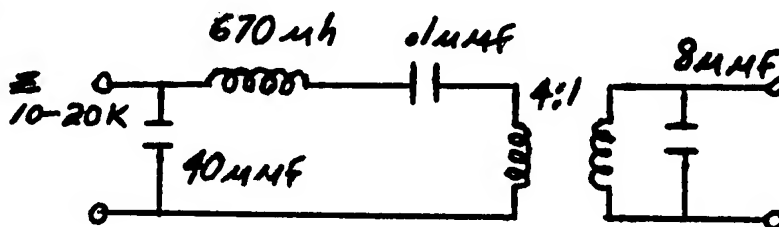
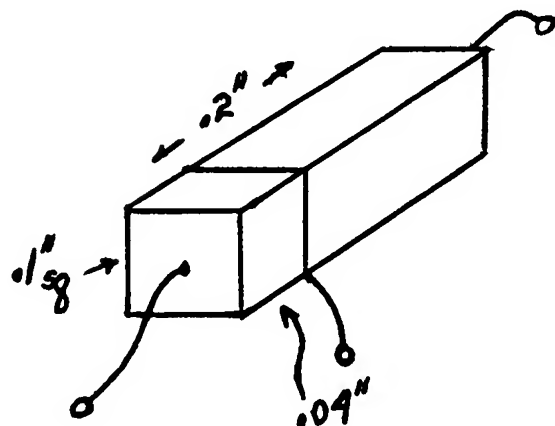
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3. We were able to examine two different lots of ceramic resonators developed by [redacted]. The resonators were approximately 1/8 inch square by 3/8 inch long; however, the drawing below shows the exact dimensions in tenths of an inch.

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DOC	5	REV DATE	2 APR 1960	BY	064540
ORIG COMP	033	OPI	56	TYPE	02
ORIG CLASS	5	PAGES	2	REV CLASS	C
JUST	22	NEXT REV	2010	AUTH	HR 70-2

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The drawing to the right (previous page) is the electrical equivalent for the ceramic resonator that is to be used for interstage coupling. The input and output capacitance is determined by the positioning of the middle wire marked No. 2. If this wire connection bisects the length of the ceramic, the input and output capacitance would be equal. The center frequency of the ceramic is determined by the length of the material. A two-stage IF amplifier was demonstrated and was noted to have a bandpass of approximately 7.5 kc and reported to have a gain of 46.7 db. A wider bandpass for the ceramic resonators is desired to compensate for the detuning effect of the transistors with temperature changes. The bandpass-determining element is also a ceramic resonator, but with a more narrow bandpass characteristic.

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presently fabricating a new batch of ceramic resonators and it is expected that this batch will more closely meet the desired characteristics, which are:

Input Frequency 2.2 mc
Output Frequency 455 kc

Over selectivity will approximate the following:

<u>Response (db)</u>	<u>Bandwidth (kc)</u>
-3	5.0
-6	5.4
-10	6.2
-20	7.8
-40	11.2
-60	16.0

Overall gain approximately 100 db
Temperature range -40°C to +40°C



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